IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A semiconductor device comprising:

an insulating film having dielectric constant not greater than 2.7 and provided above a semiconductor substrate;

a via comprising a conductive material provided in a via hole formed in the insulating film;

a first interconnection comprising a conductive material provided in an interconnection trench formed on the via in the insulating film; and

a first high-density region formed in the insulating film, having a cylindrical shape surrounding the via hole, an inner surface common to a boundary of the via hole, a film density higher than the insulating film, and a film density which is maximum at the boundary of the via hole and continuously decreases towards a boundary opposite to the via hole.

Claim 2. (Original): The device according to claim 1, wherein the first high-density region has the film density greater than the insulating film.

Claim 3 (Canceled).

Claim 4 (Original): The device according to claim 1, wherein a diameter of the first high-density region is smaller than a width of the interconnection trench.

Claim 5 (Withdrawn): The device according to claim 1, further comprising: a second high-density region formed in the insulating film, and having a cylindrical shape surrounding

the interconnection trench, an inner surface common to a boundary of the interconnection trench and a film density higher than the insulating film.

Claim 6 (Withdrawn): The device according to claim 5, wherein the second high-density region has the film density greater than the insulating film.

Claim 7 (Withdrawn): The device according to claim 5, wherein the first high-density region is thicker than the second high-density region.

Claim 8 (Withdrawn): The device according to claim 5, wherein the second high-density region is thicker than the first high-density region.

Claim 9 (Withdrawn): The device according to claim 5, wherein the thickness of the second high-density region is less than 25% of the minimum distance between second interconnections formed in the insulating film.

Claim 10 (Withdrawn): The device according to claim 5, wherein the insulating film includes: a first insulating film provided at any height from a bottom end to a top end of the via hole; and a second insulating film provided at any height from a bottom end to a top end of the interconnection trench.

Claim 11 (Withdrawn): The device according to claim 10, wherein the second insulating film has a dielectric constant lower than the first insulating film, and a following relation is satisfied:

$N_{ILD2} < N_{ILD1} = N_{via2} \leq N_{via1}$ or

$N_{ILD2} < N_{ILD1} = N_{via2} < N_{via1}$ or

$N_{ILD2} < N_{via2} = N_{ILD1} < N_{via1}$

where,

N_{via1}: film density of the first high-density region

N_{via2}: film density of the first insulating film

N_{ILD1}: film density of the second high-density region

N_{ILD2}: film density of the second insulating film.

Claim 12 (Withdrawn): The device according to claim 10, wherein the first insulating film consists substantially of an organic polymer having a dielectric constant not greater than 2.3, and the second insulating film consists substantially of an organic polymer different from the first insulating film having a dielectric constant not greater than 2.7.

Claim 13 (Original): The device according to claim 1, wherein the insulating film consists substantially of an organic polymer having a dielectric constant not greater than 2.7.

Claim 14 (Original): The device according to claim 1, wherein the insulating film has a porosity not lower than 15% or film density not greater than 1.2 g/cm^3.

Claim 15 (Original): A semiconductor device comprising: an insulating film having dielectric constant not greater than 2.7 and provided above a semiconductor substrate; a via comprising a conductive material provided in a via hole formed in the insulating film; a first interconnection comprising a conductive material provided in an interconnection trench

formed on the via in the insulating film; and a first high-concentration region formed in the insulating film, having a cylindrical shape surrounding the via hole, an inner surface common to a boundary of the via hole, and a carbon concentration higher than the insulating film.

Claim 16 (Original): The device according to claim 15, wherein the first high-concentration region has the carbon concentration greater than the insulating film.

Claim 17 (Original): The device according to claim 15, wherein the first high-concentration region has the maximum carbon concentration in a boundary between the via hole and the first high-concentration region.

Claim 18 (Original): The device according to claim 15, wherein a diameter of the first high-concentration region is smaller than a width of the interconnection trench.

Claim 19 (Withdrawn): The device according to claim 15, further comprising: a second high-concentration region formed in the insulating film, and having a cylindrical shape surrounding the interconnection trench, an inner surface common to a boundary of the interconnection trench and a carbon concentration higher than the insulating film.

Claim 20 (Withdrawn): The device according to claim 19, wherein the second high-concentration region has the carbon concentration greater than the insulating film.

Claim 21 (Withdrawn): The device according to claim 19, wherein the first high-concentration region is thicker than the second high-concentration region.

Claim 22 (Withdrawn): The device according to claim 19, wherein the second high-concentration region is thicker than the first high-concentration region.

Claim 23 (Withdrawn): The device according to claim 19, wherein the thickness of the second high-concentration region is less than 25% of the minimum distance between second interconnections formed in the insulating film.

Claim 24 (Withdrawn): The device according to claim 19, wherein the insulating film includes: a first insulating film provided at any height from a bottom end to a top end of the via hole; and a second insulating film provided at any height from a bottom end to a top end of the interconnection trench.

Claim 25 (Withdrawn): The device according to claim 24, wherein the second insulating film has a dielectric constant lower than the first insulating film, and a following relation is satisfied:

$N_{ILD2} < N_{ILD1} = N_{via2} \leq N_{via1}$ or

$N_{ILD2} < N_{ILD1} = N_{via2} < N_{via1}$ or

$N_{ILD2} < N_{via2} = N_{ILD1} < N_{via1}$

where,

N_{via1}: carbon concentration of the first high-concentration region

N_{via2}: carbon concentration of the first insulating film

N_{ILD1}: carbon concentration of the second high-concentration region

N_{ILD2}: carbon concentration of the second insulating film.

Claim 26 (Withdrawn): The device according to claim 24, wherein the first insulating film consists substantially of an organic polymer having a dielectric constant not greater than 2.3, and the second insulating film consists substantially of an organic polymer different from the first insulating film having a dielectric constant not greater than 2.7.

Claim 27 (Original): The device according to claim 15, wherein the insulating film consists substantially of an organic polymer having a dielectric constant not greater than 2.7.

Claim 28 (Original): The device according to claim 15, wherein the insulating film has a porosity not lower than 15% or film density not greater than 1.2 g/cm^3.

Claim 29 (Withdrawn): A method of manufacturing a semiconductor device, comprising: forming an insulating film above a semiconductor substrate, the insulating film having dielectric constant not greater than 2.7 and having a via hole; forming a buried insulating film on the insulating film while filling the via hole; forming an interconnection trench connected with the via hole in the buried insulating film and the insulating film; removing the buried insulating film; and filling the via hole and the interconnection trench with a conductive material.

Claim 30 (Withdrawn): The method according to claim 29, wherein forming an insulating film having dielectric constant not greater than 2.7 and having a via hole includes: forming the insulating film above the semiconductor substrate; and forming the via hole in the insulating film by etching.

Claim 31 (Withdrawn): The method according to claim 29, wherein removing the buried insulating film is carried out using wet etching.

Claim 32 (Withdrawn): The method according to claim 31, wherein the buried insulating film consists substantially of a material selected from a group consisting of a material same as the insulating film, a material same as the insulating film and having a film density higher than the insulating film, and SiO_2.

Claim 33 (Withdrawn): The method according to claim 29, wherein forming an insulating film having dielectric constant not greater than 2.7 and having a via hole includes: forming a first insulating film above the semiconductor substrate; forming a second insulating film different from the first insulating film on the first insulating film; forming the via hole in the first insulating film by etching; and forming the interconnection trench connected with the via hole in the second insulating film

Claim 34 (Withdrawn): The method according to claim 33, wherein the buried insulating film consists substantially of a material selected from a group consisting of a material same as the first insulating film, a material same as the first insulating film and having a film density higher than the first insulating film, a material same as the second insulating film, a material same as the second insulating film and having a film density higher than the second insulating film, and SiO_2.

Claim 35 (Withdrawn): A method of manufacturing a semiconductor device, comprising: forming a first insulating film above a semiconductor substrate, the insulating film having dielectric constant not greater than 2.7 and having a via hole; forming a second insulating film different from the first insulating film on the first insulating film while filling the via hole, the second insulating film having dielectric constant not greater than 2.7; forming an interconnection trench connected with the via hole in the second insulating film while removing the second insulating film in the via hole; and filling the via hole and the interconnection trench with a conductive material.

Claim 36 (Withdrawn): The method according to claim 35, wherein the first insulating film consists substantially of an organic polymer.

Claim 37 (Withdrawn): The method according to claim 35, wherein the second insulating film consists substantially of an organic polymer different from the first insulating film.